CLAIM + DETAILED DESCRIPTION

[Claim(s)]
[Claim 1] The waste thermal cracking furnace (1) which carries out dry distillation processing of the waste, and generates cracked gas, They are the processing equipment (2) which processes said cracked gas, and the waste gasification processing equipment with which the transfer duct (5) which supplies said cracked gas to said processing equipment (2) from said waste thermal cracking furnace (1) is prepared. Waste gasification processing equipment with which an air supply means (N) to supply air to said cracked gas in said transfer duct (5) covers the lower stream side, and are distributed from the upper stream side of said transfer duct (5). [two or more]
[Claim 2] Waste gasification processing equipment of two or more of said air supply means (N) according to claim 1 which is made to correspond to the bend part part (5A) of said transfer duct (5), and is formed, respectively.
[Claim 3] Waste gasification processing equipment according to claim 2 constituted so that said air supply means (N) may blow air along the direction of a flow of said cracked gas which goes to the lower stream side from the bend part part (5A) of said transfer duct (5).
[Claim 4] [a upper stream side temperature detection means (T) to detect the temperature of said cracked gas in the high close-attendants side part of said transfer duct (5) rather than each installation part of said air supply means (N)] When the temperature of said cracked gas which is made to correspond to each of said air supply means (N), is prepared, and is detected with said upper stream side temperature detection means (T) falls rather than preset temperature Waste gasification processing equipment given in any 1 clause of the Claims 1-3 in which the control means (8) which carries out an air supply operation from the upper stream side temperature detection means (T) by said air supply means (N) of the lower stream side direct near position of said transfer duct (5) is prepared.
[Claim 5] [a lower stream side temperature detection means (T) to detect the temperature of said cracked gas in the lower stream side part of said transfer duct (5) rather than each installation part of said air supply means (N)] Make it correspond to each of said air supply means (N), and it is prepared, and [said control means (8)] It is based on the detection information on said lower stream side temperature detection means (T). Waste gasification processing equipment according to claim 4 constituted so that air content adjustment control which carries out change adjustment of the amount of air supply when carrying out an air supply operation from the lower stream side temperature detection means (T) by said air supply means (N) of the upper stream side direct near position of said transfer duct (5) may be performed.

[Claim 6] [said lower stream side temperature detection means (T) corresponding to one air supply means (N) in said two or more air supply means (N)] Waste gasification processing equipment according to claim 5 in which combination composition is carried out from the one air supply means (N) by said upper stream side temperature detection means (T) corresponding to said air supply means (N) of the lower stream side direct near position of said transfer duct (5).
[Claim 7] Said air supply means (N) is equipped with the opening-and-closing valve (V) which is intermittent in an inflow into said transfer duct (5) of the air supplied by predetermined pressure, and is constituted, and said control means (8) sets to said air content adjustment control. Said opening-and-closing valve (V) with which said air supply means (N) was equipped is made to ****** intermittently. And waste gasification processing equipment according to claim 5 or 6 constituted based on the deviation of the temperature of said cracked gas and target temperature which are detected with said lower stream side temperature detection means (T) so that adjustment control of the ********** of said opening-and-closing valve (V) may be carried out.
[Claim 8] Although said control means (8) carried out change adjustment of the amount of air supply by said air supply means (N) in said air content adjustment control When the temperature of said cracked gas detected with said lower stream side temperature detection means (T) by which it is located in the lower stream side of said transfer duct (5) from the air supply means (N) does not change Waste gasification processing equipment given in any 1 clause of the Claims 5-7 constituted so that the defect of air supply operation by said air supply means (N) may be distinguished.

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention about waste gasification processing equipment in detail It is related with the waste gasification processing equipment with which the waste thermal cracking furnace which carries out dry distillation processing of the waste, and generates cracked gas, the processing equipment which processes said cracked gas, and the transfer duct which supplies said cracked gas to said processing equipment from said waste thermal cracking furnace are prepared.
[0002]
[Description of the Prior Art] If the waste gasification processing equipment constituted so that dry distillation processing of the waste might be carried out and melting processing of the thermal cracking residual substance might be carried out is mentioned as an example For example, the waste thermal cracking furnace 1 which carries out dry distillation processing of the waste, and generates cracked gas G and the thermal cracking residual substance R as shown in drawing 7 , The processing equipment 2 which processes the cracked gas G, and the transfer duct 5 which is made to carry out conduction of said cracked gas G to said processing equipment 2, and supplies it from said waste thermal cracking furnace 1 are formed, and the melting furnace 4 which carries out melting processing of the above-mentioned thermal cracking residual substance R is formed further.
[0003] The above-mentioned waste thermal cracking furnace 1 is constituted from a rotary kiln 1A of the outside heat type, and said transfer duct 5 is connected to the exhaust gas part 3a which sends out the thermal cracking residual substance R and separated cracked gas G at gas-particle separator guard 3 with which the outlet side of the rotary kiln 1A is equipped. The thermal cracking residual substance R

separated at said gas-particle separator guard 3 is supplied to said melting furnace 4 as a processed material by conveyance equipment, after being cooled. In addition, waste is crushed by Crusher C in the size which was suitable for processing beforehand, and the dryness garbage after performing the pretreatment of drying this crush garbage with Drier D is supplied to said rotary kiln 1A as a processed material.

[0004] Said rotary kiln 1A is equipped with the hot wind generating furnace 2A for generating that heat source gas, and as fuel for generating heat source gas, said transfer duct 5 is connected to this hot wind generating furnace 2A as a fueling way in order to use said cracked gas G. In this way, in this rotary kiln 1A, cracked gas G generated from waste is used as energy resources for the heat source which heats itself. Moreover, said transfer duct 5 is connected also to the channel of flue gas which carries out conduction of the flue gas which is branched and is generated in the melting processing part 4a of said melting furnace 4 to the secondary combustion part 4b. This is for burning cracked gas G which becomes a surplus as fuel of said hot wind generating furnace 2A in said secondary combustion part 4b. That is, said hot wind generating furnace 2A and the secondary combustion part 4b constitute said processing equipment 2.

[0005] in addition, [the flue 10 which draws exhaust gas from said secondary combustion part 4b] The waste heat boiler 16 heated by the possession heat of said exhaust gas, and the gas cooling tower 12 which cools exhaust gas from the waste heat boiler 16 by spraying of water, The exhaust gas processing unit 14 which removes toxic substances, such as nitrogen oxide, from exhaust gas after cooling is formed one by one, and exhaust gas after removing a toxic substance is constituted so that it may be sent out outside from a chimney.

[0006] Since [by the way,] a distilled part (for example, oil of polymers, such as Taal) of a high-boiling point and hyperviscosity is contained in the state of steam in said cracked gas G When the temperature of cracked gas G falls, the amount of said distillate condenses in the inner wall of the transfer duct 5, and there is a possibility that this distilled part to condense may cause a blockade of the transfer duct 5. So, the temperature fall of said cracked gas G which carries out conduction of the inside is avoided into the transfer duct 5, and the external heating machine style heated from the outside so that the temperature of said cracked gas G may be maintained by 400-500 degrees C is prepared in it. As this external heating machine style, as notionally shown, for example in drawing 8 , said transfer duct 5 is made into double pipe structure. Arranging an electric heater is also performed in the perimeter part of said transfer duct 5 instead of the composition which supplies heating fluid L between the inner pipe 5a and outside pipe 5b being used, and making the transfer duct 5 into double pipe structure.

[0007] as mentioned above, as an external heating machine style when the electric heater is prepared, for example If the temperature of an electric heater may rise unusually, a heater may be disconnected by local combustion of said cracked gas G in said transfer duct 5 etc. and a heater is disconnected, the temperature of the inner wall of the transfer duct 5 near the disconnection part falls, and there is a possibility that a distilled part of cracked gas G may condense. Moreover, since duct structure is complicated when double pipe structure without fear of such disconnection is adopted, bending into said transfer duct 5 and forming a part has the problem that it is difficult or equipment cost increases. Furthermore, in order to carry out energization heating of the electric heater or to heat the heating fluid L supplied to double pipe structure, there is also a problem that it is accompanied by consumption of energy resources.

[0008] Then, these people have proposed about the technology for preventing the blockade of a transfer

duct, without consuming energy resources that the above-mentioned problem should be solved, being able to furnish inexpensive with easy structure (refer to Patent Application No. 2000-157719). Namely, with this technology, supply air to the cracked gas in a transfer duct, and cracked gas is burned. The temperature of cracked gas is raised, and he removes a distilled part in the cracked gas condensed in the inner wall of the transfer duct 5, and is trying to prevent the condensation to the inner wall of the distilled transfer duct in cracked gas with the combustion heat. As specifically shown in drawing 9 , while arranging the air supply means 20 to the upper stream side of the transfer duct 5 If it falls rather than a temperature required for the temperature of the cracked gas which arranges the temperature detection means 21 to the lower stream side of the transfer duct 5, and is detected with the temperature detection means 21 to prevent condensation for the above-mentioned distillate It was controlling so that the air of the quantity set up based on the detection temperature of the above-mentioned temperature detection means 21 was supplied in the transfer duct 5 from the air supply means 20.

[0009]

[Problem to be solved by the invention] However, there were the following points which should be improved in the above-mentioned conventional air supply technology.

(1) since it was the composition of having supplied air in a transfer duct first from the air supply means prepared in one by the side of the upper stream of a transfer duct, and burning cracked gas In order to carry out heating keeping warm of the whole transfer duct at predetermined temperature It is necessary to increase the amount of air supply supplied from the above-mentioned air supply means. As a result, cracked gas burns intensively near the arrangement part of an air supply means, and it becomes high temperature too much. For example, members, such as packing for carrying out the seal of the connection member which connects a direct tube part and an elbow part in the bend part of a transfer duct, or its connection part, damaged and deteriorated, and there was a possibility that faults, such as a gas leak, might occur.

(2) if it falls rather than the temperature which still needs for distilled condensation prevention of cracked gas the detection temperature of the temperature detection means arranged to the lower stream side of a transfer duct Since the air supply operation of an air supply means by which it is separated and located in the upper stream side of a transfer duct rather than the temperature detection means was carried out Even if the cracked gas in a transfer duct burns and the temperature of cracked gas rises by the air supply operation Will produce time delay, by the time the rise in heat is detected by a temperature detection means, and the detection temperature of a temperature detection means falls further in the meantime. Since the air content supplied from an air supply means increases based on the detection result of the further temperature fall while there is a possibility that the fault which a distilled part in cracked gas condenses in the inner wall of a transfer duct may occur, Intensive combustion was more violently carried out near the arrangement part of an air supply means, and there was a possibility that faults, such as damage to an above-mentioned member, might become large.

(3) When it bent into a transfer duct and a part was formed especially, in near [the] a bend part part, big pressure loss arose with the flow of cracked gas, and there was a problem of being easy to condense a distilled part in cracked gas in the wall in a duct near a bend part part.

[0010] The purpose of this invention is to prevent faults, such as degradation, damage, etc. to the duct composition member accompanying intensive combustion, burning the cracked gas in a transfer duct by air supply, controlling the distilled condensation in the above-mentioned cracked gas to a transfer duct, and being made to remove a condensed distilled part. Furthermore, it is in control of the distilled

condensation in the above-mentioned cracked gas to the bend part part of a transfer duct, and removing a condensed distilled part appropriately. Furthermore, it is in corresponding to the temperature fall of cracked gas promptly, and enabling it to perform suitable air supply.

[0011]

[Means for solving problem] The waste thermal cracking furnace which the waste gasification processing equipment concerning this invention carries out dry distillation processing of the waste, and generates cracked gas, In the waste gasification processing equipment with which the processing equipment which processes said cracked gas, and the transfer duct which supplies said cracked gas to said processing equipment from said waste thermal cracking furnace are prepared The 1st feature composition has like and an air supply means to supply air to said cracked gas in said transfer duct in the point according to claim 1 which covers the lower stream side and are distributed from the upper stream side of said transfer duct.

[0012] In said 1st feature composition, the point of two or more of said air supply means which is made to correspond to the bend part part of said transfer duct, and is established, respectively has this 2nd feature composition like a description at Claim 2.

[0013] Like and the point according to claim 3 constituted so that said air supply means may blow air in said 2nd feature composition along the direction of a flow of said cracked gas which goes to the lower stream side from the bend part part of said transfer duct have this 3rd feature composition.

[0014] This 4th feature composition is set in said 1st [the] - one of the 3rd feature composition like a description at Claim 4. [a upper stream side temperature detection means to detect the temperature of said cracked gas in the high close-attendants side part of said transfer duct rather than each installation part of said air supply means] When the temperature of said cracked gas which is made to correspond to each of said air supply means, is prepared, and is detected with said upper stream side temperature detection means falls rather than preset temperature It is in the point that the control means which carries out an air supply operation rather than the upper stream side temperature detection means by said air supply means of the lower stream side direct near position of said transfer duct is established.

[0015] This 5th feature composition is set in said 4th feature composition like a description at Claim 5. [a lower stream side temperature detection means to detect the temperature of said cracked gas in the lower stream side part of said transfer duct rather than each installation part of said air supply means] Make it correspond to each of said air supply means, it is prepared, and said control means is based on the detection information on said lower stream side temperature detection means. It is in the point constituted so that air content adjustment control which carries out change adjustment of the amount of air supply when carrying out an air supply operation rather than the lower stream side temperature detection means by said air supply means of the upper stream side direct near position of said transfer duct may be performed.

[0016] This 6th feature composition is set in said 5th feature composition like a description at Claim 6. Said lower stream side temperature detection means corresponding to one air supply means in said two or more air supply means is at the point in which combination composition is carried out rather than the one air supply means by said upper stream side temperature detection means corresponding to said air supply means of the lower stream side direct near position of said transfer duct.

[0017] This 7th feature composition is set in said 5th or 6th feature composition like a description at Claim 7. Said air supply means is equipped with the opening-and-closing valve which is intermittent in an inflow into said transfer duct of the air supplied by predetermined pressure, and is constituted, and

said control means sets to said air content adjustment control. It is in the point constituted so that adjustment control of the ********** of said opening-and-closing valve may be carried out based on the deviation of the temperature of said cracked gas and target temperature which are made to ****** intermittently said opening-and-closing valve with which said air supply means was equipped, and are detected with said lower stream side temperature detection means.

[0018] [the composition] although this 8th feature composition carried out change adjustment of the amount of air supply according to claim 8 according [said control means / in / on like and said the 5-7th ones of feature composition, and / said air content adjustment control] to said air supply means When the temperature of said cracked gas detected with said lower stream side temperature detection means by which it is located in the lower stream side of said transfer duct rather than the air supply means does not change, it is in the point constituted so that the defect of air supply operation by said air supply means may be distinguished.

[0019] Next, the operation and effect by the feature composition of above-mentioned this invention are explained. [according to the 1st feature composition / with two or more air supply means which covered the lower stream side and were distributed from the upper stream side of a transfer duct] Air is supplied to the cracked gas which flows through the inside of a transfer duct into the lower stream side from the upper stream side, the cracked gas in a transfer duct distributes and burns in two or more [ranging from the upper stream side to the lower stream side of a transfer duct], and the combustion heat by this distributed combustion is told to the cracked gas in a transfer duct. Therefore, [carrying out distributed combustion by a little air supply as much as possible in two or more each of a transfer duct] Since the combustion heat that the temperature of internal cracked gas does not fall to the temperature below condensation temperature by the whole transfer duct is generated and cracked gas can be warmed with the combustion heat It becomes possible to prevent faults, such as degradation, damage, etc. to the duct composition member accompanying intensive combustion like before, controlling the distilled condensation in the above-mentioned cracked gas to a transfer duct, and removing a condensed distilled part.

[0020] [according to the 2nd feature composition / with the air supply means which is made to correspond to the bend part part of a transfer duct, respectively, and is prepared in it] Air is supplied to the cracked gas in the transfer duct of the bend part part, the cracked gas in the transfer duct of the bend part part burns, and the temperature in the bend part part of a transfer duct rises. Therefore, although pressure loss arises with the flow of cracked gas and it is easy to condense a distilled part of cracked gas in the wall in a duct in the bend part part of a transfer duct, since it makes it correspond to the bend part part of a transfer duct and is made to burn as mentioned above It becomes possible to remove appropriately a distilled part of the cracked gas condensed in prevention of condensation in the bend part part of the distilled transfer duct of cracked gas, and the bend part part of the transfer duct.

[0021] [according to the 3rd feature composition / with the air supply means which is made to correspond to the bend part part of a transfer duct, respectively, and is prepared in it] Air is blown along the direction of a flow of the cracked gas which goes to the lower stream side from the bend part part of the transfer duct, the cracked gas in a transfer duct burns in the range by the side of the lower stream from the bend part part, and temperature rises. Therefore, although it is easy to condense a distilled part of cracked gas to a part for the wall in a duct by the side of the lower stream from a bend part part especially in the bend part part of a transfer duct, as mentioned above Since air is blown along the direction of a flow of the cracked gas in the transfer duct which goes to the lower stream side from the

bend part part of a transfer duct and the temperature of the range by the side of the lower stream rises from a bend part part It becomes possible to remove appropriately a distilled part of the cracked gas condensed to a part for the downstream flank of prevention of a distilled part of cracked gas condensing to a part for the downstream flank of the bend part part of a transfer duct, and the bend part part of a transfer duct.

[0022] In order to detect the temperature of the cracked gas in the high close-attendants side part of a transfer duct rather than each installation part of an air supply means according to the 4th feature composition When the temperature of the cracked gas detected with the upper stream side temperature detection means which was made to correspond to each of an air supply means, and was established falls rather than preset temperature, it is controlled to carry out an air supply operation rather than the upper stream side temperature detection means by the air supply means of the lower stream side direct near position of a transfer duct. Namely, [means / air supply] if it falls rather than the preset temperature which needs the temperature of the cracked gas in the high close-attendants side part of a transfer duct to prevent distilled condensation of cracked gas When the cracked gas in the transfer duct which carried out the temperature fall is transported to the air supply means of the lower stream side direct near position of a transfer duct rather than the upper stream side temperature detection means, air supply of it is carried out and it burns, and it is controlled so that the temperature of cracked gas rises by the combustion. Therefore, since air supply will be carried out by the air supply means of a lower stream side direct near position rather than the temperature detection position if the temperature of the cracked gas in the high close-attendants side part of each air supply means falls rather than preset temperature It cannot be [time] behind to the temperature fall of cracked gas, it can be coped with quickly, and the temperature fall of cracked gas can be made to avoid certainly.

[0023] In order to detect the temperature of the cracked gas in the lower stream side part of a transfer duct rather than each installation part of an air supply means according to the 5th feature composition It is based on the detection information on the cracked gas detected with the lower stream side temperature detection means which was made to correspond to each of said air supply means, and was established. Air content adjustment control which carries out change adjustment of the amount of air supply when carrying out an air supply operation rather than the lower stream side temperature detection means by said air supply means of the upper stream side direct near position of a transfer duct is performed. [namely, the amount of air supply which detected the temperature of the cracked gas in the lower stream side part of a transfer duct with the lower stream side temperature detection means, and carried out change adjustment based on the information on the detection temperature rather than the air supply means] By the air supply means of the upper stream side direct near position of a transfer duct, to the cracked gas in a transfer duct, air is supplied and is burned rather than the lower stream side temperature detection means. Therefore, since the amount of air supply when carrying out the air supply operation of each of that air supply means based on the temperature detection information on the cracked gas in the lower stream side part rather than each air supply means is adjusted when carrying out the air supply operation of each air supply means The combustion state of cracked gas is controlled in the proper state as much as possible, and it becomes possible to maintain the temperature of cracked gas in the suitable temperature range.

[0024] According to the 6th feature composition, combination composition of the lower stream side temperature detection means corresponding to one air supply means in two or more air supply means is carried out rather than the one air supply means by the upper stream side temperature detection means

corresponding to the air supply means of the lower stream side direct near position of a transfer duct. Namely, rather than one air supply means [the temperature of the cracked gas in the lower stream side part of a transfer duct] The upper stream side temperature detection means corresponding to the air supply means of the lower stream side direct near position of a transfer duct detects rather than the one air supply means. The upper stream side temperature detection means corresponding to the one air supply means detects the temperature of the cracked gas in the high close-attendants side part of a transfer duct rather than the one air supply means. Therefore, since the temperature of the cracked gas of both the high close-attendants side part of each air supply means and the lower stream side part is detectable only by making it correspond to each of two or more air supply means, and establishing the upper stream side temperature detection means, it is not necessary to establish the lower stream side temperature detection means separately, and simplification of control composition is attained.

[0025] According to the 7th feature composition, it is based on the deviation of the temperature of cracked gas and target temperature which are detected with said lower stream side temperature detection means. While it prepares for the air supply means of the lower stream side direct near position of a transfer duct rather than the lower stream side temperature detection means, adjustment control of the ********** of the opening-and-closing valve ******(ed) intermittently is carried out and the opening-and-closing valve is ******(ing) While the air supplied to an air supply means by predetermined pressure flows into a transfer duct and the above-mentioned opening-and-closing valve is not ******(ing), it is controlled so that the above-mentioned air does not flow into a transfer duct, and change adjustment of the amount of air supply is carried out by this. Therefore, the simple composition of carrying out adjustment control of the ********** of the opening-and-closing valve prepared in the air supply way etc. enables it to carry out change adjustment of the amount of air supply appropriately.

[0026] When according to the 8th feature composition change adjustment of the amount of air supply by an air supply means is carried out and the temperature of the cracked gas detected with a lower stream side temperature detection means by which it is located in the lower stream side of a transfer duct rather than the air supply means does not change, the defect of the air supply operation by the air supply means is distinguished. Namely, if the amount of air supply supplied to the cracked gas in a transfer duct by the air supply means is changed The temperature which the amount of combustion of the cracked gas which burns with the supplied air changes, and rises changes. Since the temperature change should be detected with a lower stream side temperature detection means by which it is located in the lower stream side of a transfer duct Even if it carries out change adjustment of the amount of air supply by an air supply means, when the temperature change of cracked gas is not detected, the air supply operation by an air supply means distinguishes that he is the defect to whom it is not carried out proper. Therefore, the quality of the air supply operation by an air supply means can be appropriately distinguished using the control composition, performing said air content adjustment control. And by making it stop operation of equipment based on poor distinction of the above-mentioned air supply operation If equipment is worked while the air supply operation by an air supply means has been poor Air supply cannot be carried out to the cracked gas in a transfer duct, but the fault that the temperature fall of cracked gas cannot be prevented appropriately can be made to avoid. Moreover, it enables a worker to perform suitable disposal, such as check of an air supply means, by operating an alarm means etc. based on poor distinction of the above-mentioned air supply operation.

[0027]

[Mode for carrying out the invention] An example of the form of implementation of the waste

gasification processing equipment concerning above-mentioned this invention is explained below, referring to Drawings. In addition, about the element which has the same element as the element explained in said Prior art, and an equivalent function, the same mark is attached and a part of detailed explanation abbreviates to having given previous drawing 7 .

[0028] The waste thermal cracking furnace 1 which the waste gasification processing equipment concerning this invention carries out dry distillation processing of the waste as shown in drawing 1 , and generates cracked gas G, The processing equipment 2 which processes said cracked gas G, and the transfer duct 5 which supplies the above-mentioned cracked gas G to the processing equipment 2 from the waste thermal cracking furnace 1 are formed, and it constitutes. As said waste thermal cracking furnace 1, the rotary kiln 1A of an outside heat type is used. This rotary kiln 1A attaches the hot wind generating furnace 2A, and the heat gas generated at this hot wind generating furnace 2A constitutes it so that external heating may be carried out, and it uses cracked gas G generated by the rotary kiln 1A as fuel of this hot wind generating furnace 2A. That is, said hot wind generating furnace 2A is constituted as processing equipment 2 of cracked gas G. For this reason, the transfer duct 5 to which the fueling way to said hot wind generating furnace 2A is made to carry out conduction of the cracked gas G from the exhaust gas part 3a of the outlet side of said rotary kiln 1A is connected. Heavy oil is also supplied to this hot wind generating furnace 2A, and it constitutes so that a hot wind may be generated with the combustion heat of heavy oil at the time of commencement of commercial operation.

[0029] Unlike the conventional thing, this transfer duct 5 does not prepare an external heating machine style. And as the composition is shown in drawing 2 expressed notionally, from the upper stream side of the transfer duct 5, an air supply means N to supply the air for combustion to cracked gas G in the transfer duct 5 covers the lower stream side, and are distributed. [two or more] Each air supply means N is equipped with the opening-and-closing valve V which is intermittent in an inflow into said transfer duct 5 of the air supplied to the air supply way 6 by predetermined pressure (concrete for example, 5-6kg/cm2), and is constituted. In addition, five air supply means N1-N5 are formed in a figure, and the example which it is made to correspond to each air supply means N1-N5, and is equipped with five opening-and-closing valves V1-V5 is shown in it. Each of two or more above-mentioned air supply means N makes it correspond to the bend part part 5A of said transfer duct 5, and is prepared. And as the 1st air supply means N1 is made into an example and shown in drawing 3 from the upper stream side, it is constituted so that said each air supply means N may blow air along the direction of a flow of said cracked gas G which goes to the lower stream side from the bend part part 5A of said transfer duct 5.

[0030] [a upper stream side temperature detection means T to detect the temperature of said cracked gas G in the high close-attendants side part of said transfer duct 5 rather than each installation part of said air supply means N] It is made to correspond to each of said air supply means N, and is prepared, and a lower stream side temperature detection means T to detect the temperature of said cracked gas G in the lower stream side part of said transfer duct 5 rather than each installation part of said air supply means N makes it correspond to each of said air supply means N, and is established. [and said lower stream side temperature detection means T corresponding to / as shown in drawing 2 / one air supply means N in two or more air supply means N] Combination composition is carried out from the one air supply means N by said upper stream side temperature detection means T corresponding to said air supply means N of the lower stream side direct near position of said transfer duct 5. For example, the lower stream side temperature detection means T3 corresponding to the 2nd air supply means N2 is used also [means / T3 / corresponding to the 3rd air supply means N3 of the lower stream side direct near position of said

transfer duct 5 / upper stream side temperature detection] rather than the 2nd air supply means N2 from the upper stream side. In addition, the above-mentioned temperature detection means T is what detects the temperature of cracked gas G directly or indirectly. As it is made to contact directly into said cracked gas G, may be the thermocouple thermometer inserted into said transfer duct 5, and the inner wall temperature of the transfer duct 5 is detected. The temperature of cracked gas G may be determined or presumed, you may determine and the radiation of said cracked gas G to the temperature may be presumed.

[0031] When the temperature of said cracked gas G detected with said upper stream side temperature detection means T falls rather than preset temperature The control means 8 which carries out an air supply operation from the upper stream side temperature detection means T by said air supply means N of the lower stream side direct near position of said transfer duct 5 is established. When [furthermore,] making the air supply operation by this air supply means N perform The control means 8 is constituted so that air content adjustment control which carries out change adjustment of the amount of air supply when carrying out an air supply operation from the lower stream side temperature detection means T by said air supply means N of the upper stream side direct near position of said transfer duct 5 may be performed based on the detection information on said lower stream side temperature detection means T.

[0032] As shown in drawing 4 (b) (b), said control means 8 specifically sets to said air content adjustment control. Based on deviation deltaT (TK-MK) of the temperature TK of cracked gas G and the target temperature MK which are made to ****** intermittently the opening-and-closing valve V with which said air supply means N was equipped, and are detected with the lower stream side temperature detection means T, it is constituted so that adjustment control of the ********** of the opening-and-closing valve V may be carried out. That is, duty control to which the ratio [as opposed to / both / the cycle time ts of the ON time t] make only the predetermined ON time t ****** whose opening-and-closing valve V for every predetermined cycle time ts is made to increase, so that the above-mentioned temperature deviation deltaT becomes large is performed. And like the flow chart shown in drawing 5 , while the detection temperature of the upper stream side temperature detection means T is falling rather than preset temperature, the above-mentioned air supply control is performed, and while the detection temperature of the upper stream side temperature detection means T is not falling rather than preset temperature, execution of the above-mentioned air supply control is stopped.

[0033] Although the temperature of cracked gas G discharged from said rotary kiln 1A is 430-450 degrees C in the above composition If a high close-attendants side temperature detected with said upper stream side temperature detection means T turns into under the specific preset temperature (for example, 400 degrees C) set up, for example among 400-500 degrees C Air is supplied in the transfer duct 5 from the upper stream side temperature detection means T from the air supply means N of the lower stream side direct near position of the transfer duct 5. And based on deviation deltaT (TK-MK) to the target temperature MK (for example, 400 degrees C) of the lower stream side temperature TK detected with the lower stream side temperature detection means T corresponding to the air supply means N, the amount of air supply from the air supply means N is set up as mentioned above, and said air content adjustment control is performed. In addition, as for the air supplied in said transfer duct 5, it is desirable that it is preheating air preheated by around 200 degrees C at the point of avoiding the temperature drop accompanying cooling of cracked gas with the air.

[0034] In this way, a rise in heat is brought to said cracked gas G corresponding to the combustion calorific value because the cracked gas in contact with the supplied air burns, and it is adjusting so that

the temperature of cracked gas G in said transfer duct 5 may not become 350 degrees C or less. That is, if said cracked gas G is generally cooled by 350 degrees C or less, adhesion of Taal in the inner wall of said transfer duct 5 will become remarkable. In this way, a distilled part of Taal in cracked gas G etc. can be adhered and accumulated in the inner wall of said transfer duct 5, and the situation of resulting in the blockade of said transfer duct 5 finally can be avoided appropriately.

[0035] The crusher C which crushes the waste to throw in in a size suitable for dryness and thermal cracking processing as pretreatment equipment which pretreats to the waste thrown into this, and the drier D which dries the waste after crush beforehand are attached to said rotary kiln 1A. When this dry-distills waste in said rotary kiln 1A, it is for avoiding steam evaporating so much and reducing the lower calorific value of cracked gas G. Although a rotary drier is suitably used as said drier D, as this dryness heat source fluid, in the example of illustration, the heat gas from the hot wind generating furnace 2A after heating said rotary kiln 1A is used, and consumption reduction of energy resources is aimed at also here.

[0036] Moreover, as shown in drawing 1 , after the thermal cracking residual substance R discharged from the residual substance discharge part 3b of said rotary kiln 1A is supplied to the melting processing part 4a of a melting furnace 4 by conveyance equipment after cooling, and it burns an inflammable ingredient, it carries out melting processing of the combustion residual substance, and forms the melting slag S. Moreover, said transfer duct 5 is branched, and it connects with the secondary combustion part 4b of said melting furnace 4, and has been made to carry out combustion processing of the excessive cracked gas G in this secondary combustion part 4b making it burn at said hot wind generating furnace 2A. In this way, said secondary combustion part 4b also constitutes said processing equipment 2. And cover the lower stream side from the upper stream side of the transfer duct 5, and this branched transfer duct 5 is also made to distribute two or more said air supply means N and said temperature detection means T, and it constitutes so that said air content adjustment control may be performed by said control means 8.

[0037] [the flue 10 which draws exhaust gas from said secondary combustion part 4b] The air preheating machine 11 which heats beforehand the air supplied to said melting furnace 4 with the possession heat of said exhaust gas, The gas cooling tower 12 which sprays water into it and cools exhaust gas from the air preheating machine 11, The dust catcher 13 which **** exhaust gas after cooling, and the exhaust gas processing unit 14 which removes toxic substances, such as nitrogen oxide, from exhaust gas after **** are formed one by one, and exhaust gas after removing a toxic substance is sent out by the invitation fan style 15 towards a chimney.

[0038] Like point **, as for said air supply means N, it is desirable to constitute so that preheating air may be supplied in said transfer duct 5, and an air preheating means 7 to heat supply air beforehand using the waste heat in a system as the source of air supply is used. It is possible to use the air preheating machine 11 which heats the air to said melting furnace 4 beforehand as this air preheating means 7. Moreover, it can be used, being able to prepare the heat exchanger which carries out heat exchange to heating gas after heating the drier which dries beforehand the waste thrown into said waste thermal cracking furnace 1, or the air cooling part which cools other hot sections can be used. About 200-300 degrees C of the preheating temperature of this air are enough.

[0039] Moreover, although said control means 8 carried out change adjustment of the amount of air supply by said air supply means N in said air content adjustment control When the temperature of said cracked gas G detected with said lower stream side temperature detection means T by which it is located

in the lower stream side of said transfer duct 5 from the air supply means N does not change, it is constituted so that the defect of air supply operation by said air supply means N may be distinguished. In addition, the defect of air supply operation by the above-mentioned air supply means N distinguishes every air supply means N1-N5. Moreover, since predetermined time will be required by the time the amount of combustion of cracked gas G changes with change of the amount of air supply and it is detected as a temperature change by the lower stream side temperature detection means T even if a change of the above-mentioned amount of air supply is made In practice, after a change of the amount of air supply is made, based on the detection temperature of the lower stream side temperature detection means T in the time of carrying out predetermined time progress, the defect of air supply operation by the air supply means N is distinguished. And if the defect of this air supply operation is distinguished, the cleaning mechanism which tells whether the air supply means N of which position is poor, or is not illustrated will be operated, and ****** of the poor air supply means N will be cleaned.

[0040] In the waste gasification processing equipment which relates to this invention as a result of constituting as mentioned above In the whole ranging from the upper stream side to the lower stream side of the transfer duct 5 which carries out conduction of the cracked gas G from a waste thermal cracking furnace Condensation of the high temperature **** ingredient in said cracked gas (for example, Taal) is prevented effectively. moreover, [a possibility that said transfer duct 5 may blockade disappears, and] as energy resources for heating offered for the blockade prevention since the condensed high temperature **** ingredient is removable Since the thermal energy which carries out subraw within a system, i.e., the thermal energy obtained by burning the cracked gas G itself, is exploited without asking outside, processing cost is hardly required. Furthermore, since it is the easy structure of establishing the air supply means N as a means for burning cracked gas G, like before By losing that equipment cost increases like [in the case of installing the electric heater for heating or constituting into the duct of double pipe structure], covering the lower stream side and moreover, making the above-mentioned air supply means N distribute from the upper stream side of the transfer duct 5 Since it is made to distribute at two or more places and the above-mentioned cracked gas G was burned, the fault to which the temperature of the transfer duct 5 carries out an abnormal rise locally, and a duct composition member carries out degradation etc. by intensive combustion could be controlled.

[0041] [Another embodiment] Another embodiment of the waste gasification processing equipment concerning this invention which was not shown in the above-mentioned embodiment is explained below. Although two or more air supply means N are made to correspond to the bend part part 5A of the transfer duct 5 and were distributed in the above-mentioned embodiment, you may make it, arrange the air supply means N in a part for example, in a part which is long in the middle of the direct tube part.

[0042] [the above-mentioned embodiment] when the control means 8 makes two or more air supply means N perform an air supply operation Although it was made to make the above-mentioned air supply operation perform based on each detection information on the upper stream side temperature detection means T prepared in the high close-attendants side part of each air supply means N, and the lower stream side temperature detection means T prepared in the lower stream side part, it does not restrict to this composition. For example, are controllable to supply the air content which set up periodically two or more air supply means N beforehand (at for example, definite-period-of-time interval). Or one temperature detection means prepared in the predetermined position (for example, the lower stream side) of the transfer duct 5 detects the temperature of cracked gas G. If the temperature of the cracked gas G falls rather than preset temperature, it is also controllable to supply simultaneously the air content

beforehand set up by two or more air supply means N.
[0043] Although combination composition of the lower stream side temperature detection means T was carried out by the upper temperature detection means T, you may make it establish the lower stream side temperature detection means apart from the upper temperature detection means T in the above-mentioned embodiment. In this case, the distance from an air supply means N to correspond is suitably set up as an installation position of the lower stream side temperature detection means, and a request can be made to control.
[0044] Although the target temperature MK when setting preset temperature in case the control means 8 makes the air supply means N perform an air supply operation as 400 degrees C, and performing adjustment control of the amount of air supply based on the temperature deviation of the detection temperature TK and the target temperature MK was set as 400 degrees C in the above-mentioned embodiment Not only in the temperature which the embodiment showed, the above-mentioned preset temperature and the target temperature MK can be set up suitably. Even if the temperature of cracked gas falls to 350 degrees C or less, when there are few amounts of condensation adhesion to the inner wall of the transfer duct 5 This condensation adhesion thing may be automatically removed by subsequent transition, and what is necessary is just to, set up suitably the above-mentioned preset temperature and the target temperature MK in short according to the characteristic of cracked gas G etc.
[0045] When [furthermore,] performing adjustment control of the amount of air supply in the above-mentioned embodiment based on deviation deltaT (TK-MK) to the target temperature MK of the lower stream side temperature TK detected with the lower stream side temperature detection means T ********** of the opening-and-closing valve V which is intermittent in an inflow into the transfer duct 5 of the air supplied by predetermined pressure can be performed with various control forms other than this, although it was made to carry out change control what is called by duty control according to the above-mentioned temperature deviation.
[0046] Although the above-mentioned embodiment explained the example which uses the rotary kiln 1A of an outside heat type as a waste thermal cracking furnace 1 Said waste thermal cracking furnace 1 may not be restricted to the rotary kiln 1A of an outside heat type, **** fluid may be introduced into an inside, and the inside of a furnace may be heated by burning dry distilled gas or a processed material partially. Furthermore, you may be a thermal cracking melting furnace like [other than a kiln (for example, a shaft kiln)].
[0047] Although the above-mentioned embodiment explained the example which considers the secondary combustion part 4b which formed the hot wind generating furnace 2A attached to the rotary kiln 1A, and the melting furnace 4 as the processing equipment 2 of cracked gas G The transfer duct 5 is connected only to the secondary combustion part 4b of a melting furnace 4, and it may be made to consider it as the processing equipment 2 without not connecting the transfer duct 5 to said hot wind generating furnace 2A, therefore considering the hot wind generating furnace 2A as processing equipment in addition to this. Or the composition which it not only connects said transfer duct 5 to the secondary combustion part 4b, but connects said transfer duct 5 also to the fueling way of the melting processing part 4a, and the melting processing part 4a considers as the processing equipment 2 may be used. Furthermore, it is good also not only considering the thing of the illustrated inside but the synthetic equipment which uses gas **** equipment of cracking equipment etc. and the ingredient of cracked gas as materials, for example as said processing equipment 2. No matter these processing equipment 2 may be what things, it is because the problem shown in the clause of the technical problem arises and this

problem can be coped with by this invention. Although the above-mentioned embodiment explained the example which put the melting furnace 4 side by side at the waste thermal cracking furnace 1, said melting furnace does not need to be put side by side.

[0048] Although the above-mentioned embodiment explained the example which heats beforehand the air supplied in the transfer duct 5 at about 200 degrees C, this air preheating is not indispensable. That is, it is because the **** effect may fully be shown with quantity, inlet temperature, etc. of cracked gas which circulate the inside of said transfer duct 5 even if it introduces the air of normal temperature.

[0049] While covering the lower stream side from the upper stream side of the transfer duct 5 and making drawing 6 distribute two or more air supply means N like the above-mentioned embodiment, another form of the waste gasification processing equipment which formed the upper stream side side and lower stream side detection means T in the upper stream close-attendants side part and the lower stream side part is shown. In the above-mentioned embodiment, exhaust gas from the secondary combustion part 4b of a melting furnace 4 to the flue 10 to draw In addition, the air preheating machine 11, It constituted so that exhaust gas after forming the gas cooling tower 12, a dust catcher 13, and the exhaust gas processing unit 14 one by one and removing a toxic substance might be turned to a chimney by the invitation fan style 15 and might be sent out, but with the form shown in drawing 6 , it replaces with the gas cooling tower 12, and the waste heat boiler 16 is formed. You may arrange apparatus which may form both the waste heat boiler 16 and said gas cooling tower 12, and is incidentally completely different from these.

[0050] In addition, in order to make contrast with Drawings convenient at the clause of Claims, a mark is described, but this invention is not limited to the composition of an accompanying drawing by this entry.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The whole composition figure showing an example of the waste gasification processing equipment concerning this invention

[Drawing 2] The figure explaining the composition of the transfer duct concerning this invention, and air content adjustment control

[Drawing 3] The sectional view showing the composition of the bend part part of a transfer duct

[Drawing 4] The time chart and graph which show the operational characteristic of air content adjustment control

[Drawing 5] The flow chart of air supply control

[Drawing 6] The whole composition figure showing other examples of the waste gasification processing equipment concerning this invention

[Drawing 7] The whole composition figure showing the conventional waste gasification processing equipment

[Drawing 8] The sectional view explaining the conventional external heating machine style

[Drawing 9] The sectional view explaining the conventional air supply means

[Explanations of letters or numerals]

1 Waste Thermal Cracking Furnace
2 Processing Equipment
5 Transfer Duct
5A Bend part part
8 Control Means
N Air supply means
T Upper stream side temperature detection means
T Lower stream side temperature detection means
V Opening-and-closing valve

[Translation done.]